

CONNECTICUT RIVER BASIN  
VERNON, CONNECTICUT

# ALDON MILL POND DAM CT 00622

## PHASE I INSPECTION REPORT NATIONAL DAM INSPECTION PROGRAM



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DEPARTMENT OF THE ARMY  
NEW ENGLAND DIVISION, CORPS OF ENGINEERS  
WALTHAM, MASS. 02154

MARCH, 1981

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Aldon Mill Pond Dam is a stone masonry and earth embankment structure approximately 95 feet long and 25.5 feet high. The dam is judged to be in FAIR condition with several areas that require attention. The dam is classified as SMALL and has a SIGNIFICANT hazard potential. The test flood for this dam is the 100-year flood and is calculated to be 2,500 cfs.		



DEPARTMENT OF THE ARMY  
NEW ENGLAND DIVISION, CORPS OF ENGINEERS  
424 TRAPELO ROAD  
WALTHAM, MASSACHUSETTS 02254

REPLY TO  
ATTENTION OF:

APR 2 1981

NEDED

Honorable William A. O'Neill  
Governor of the State of Connecticut  
State Capitol  
Hartford, Connecticut 06115

Dear Governor O'Neill:

Inclosed is a copy of the Aldon Mill Pond Dam (CT-00622) Phase I Inspection Report, which was prepared under the National Program for Inspection of Non-Federal Dams. This report is presented for your use and is based upon a visual inspection, a review of the past performance and a brief hydrological study of the dam. A brief assessment is included at the beginning of the report. I have approved the report and support the findings and recommendations described in Section 7 and ask that you keep me informed of the actions taken to implement them. This follow-up action is a vitally important part of this program.

A copy of this report has been forwarded to the Department of Environmental Protection, the cooperating agency for the State of Connecticut. In addition, a copy of the report has also been furnished the owner, Aldon Associates, Inc., 1 Court Street, Rockville, CT 06066.

Copies of this report will be made available to the public, upon request, by this office under the Freedom of Information Act. In the case of this report the release date will be thirty days from the date of this letter.

I wish to take this opportunity to thank you and the Department of Environmental Protection for your cooperation in carrying out this program.

Sincerely,

C.E. EDGAR, III  
Colonel, Corps of Engineers  
Division Engineer

Incl  
As stated

ALDON MILL POND DAM

CT 00622

CONNECTICUT RIVER BASIN

VERNON, CONNECTICUT

PHASE I INSPECTION REPORT

NATIONAL DAM INSPECTION PROGRAM



## NATIONAL DAM INSPECTION PROGRAM

### PHASE I INSPECTION REPORT

Identification Number:	CT 00622
Name:	Aldon Mill Pond Dam
Town:	Vernon
County and State:	Tolland County, Connecticut
Stream:	Tankerhoosen River
Date of Inspection:	November 6, 1980

### BRIEF ASSESSMENT

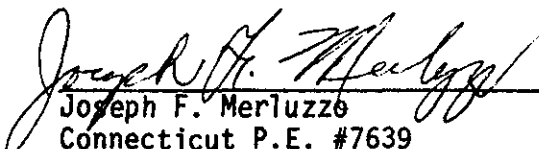
Aldon Mill Pond Dam is a stone masonry and earth embankment structure approximately 95 feet long and 25.5 feet high. The downstream face is vertical stone masonry with a concrete buttress center section on a 1:2.5 slope. The spillway is 71.5 feet long and is flanked by concrete capped stone masonry abutments rising to the top of the dam, approximately 5.5 feet above the spillway. A concrete gate structure on the southeast side of the dam has been filled in and has been out of service for some time. This gate had controlled water entering a sluiceway that had been used for water power by a downstream factory; however, this sluiceway has also been abandoned and filled in. Water from the pond is presently piped into the factory where it is pumped into a water tower for fire protection. The pond's only other use is for recreation. There is no low-level discharge pipe for this dam. The drainage area is 12.6 square miles and the pond has approximately 87 acre-feet of storage capacity.

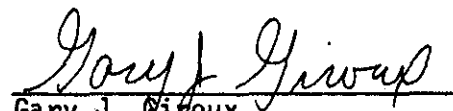
The assessment of the dam is based on a visual inspection, available information and hydraulic/hydrologic computations. The dam is judged to be in FAIR condition with several areas that require attention. These areas include trees and brush growing on the embankment, a stump adjacent to the northwest abutment, missing stones from the downstream face and a scour hole below the spillway.

The dam is classified as SMALL and has a SIGNIFICANT hazard potential in accordance with guidelines established by the Corps of Engineers. The test flood according to these guidelines ranges from the 100-year flood to 1/2 the Probable Maximum Flood (PMF). The test flood for this dam is the 100-year flood and is calculated to be 2,500 cfs. The spillway capacity at the top of the dam is 2,435 cfs or 97 percent of the test flood outflow. The test flood outflow will overtop the dam by 0.2 feet. Approximately 200 feet downstream the failure floodwave would hit a factory building adjacent to the river.

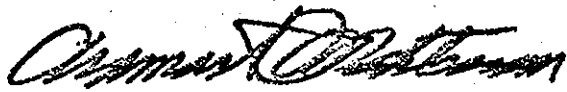
It is recommended that the owner engage the services of a qualified registered engineer experienced in the design of dams to supervise removal of the trees and the stump from the dam, investigate the danger of instability from the missing stones on the downstream face, investigate a means of stabilizing the scour hole below the spillway and investigate the feasibility of installing a low-level discharge pipe. It is also recommended that the owner remove brush from the embankment, clear the spillway channel of debris, repair cracked and spalled concrete, establish a formal warning system and initiate a periodic technical inspection program.

The owner should implement the recommendations and remedial measures described above and in greater detail in Section 7 within one year after receipt of this Phase I Inspection Report.

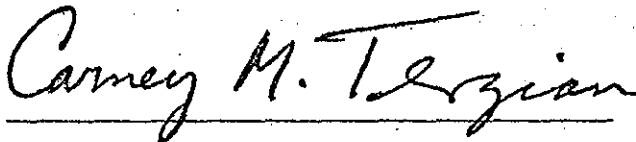
  
Joseph F. Merluzzo  
Connecticut P.E. #7639  
Project Manager

  
Gary J. Givoux  
Connecticut P.E. #11477  
Project Engineer

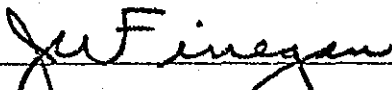
This Phase I Inspection Report on Aldon Mill Pond Dam (CT-00622) has been reviewed by the undersigned Review Board members. In our opinion, the reported findings, conclusions, and recommendations are consistent with the Recommended Guidelines for Safety Inspection of Dams, and with good engineering judgement and practice, and is hereby submitted for approval.



ARAMAST MAHTESIAN, MEMBER  
Geotechnical Engineering Branch  
Engineering Division

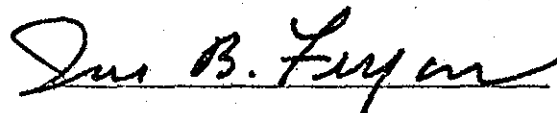


CARNEY M. TERZIAN, MEMBER  
Design Branch  
Engineering Division



JOSEPH W. FINEGAN, JR., CHAIRMAN  
Water Control Branch  
Engineering Division

APPROVAL RECOMMENDED:



JOE B. FRYAR  
Chief, Engineering Division

## PREFACE

This report is prepared according to the Recommended Guidelines for Safety Inspection of Dams, for Phase I Inspections. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Inspection is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigations and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I Inspection; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Phase I Inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established guidelines, the Spillway Test Flood is based on the estimated Probable Maximum Flood for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and variety of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies considering the size of the dam, its general condition and the downstream damage potential.

The Phase I Inspection does not include an assessment of the need for fences, gates, "no trespassing" signs, repairs to existing fences and railings and other items which may be needed to minimize trespass and provide greater security for the facility and safety to the public. An evaluation of the project for compliance with Occupational Safety and Health Administration's (OSHA) rules and regulations is also excluded.

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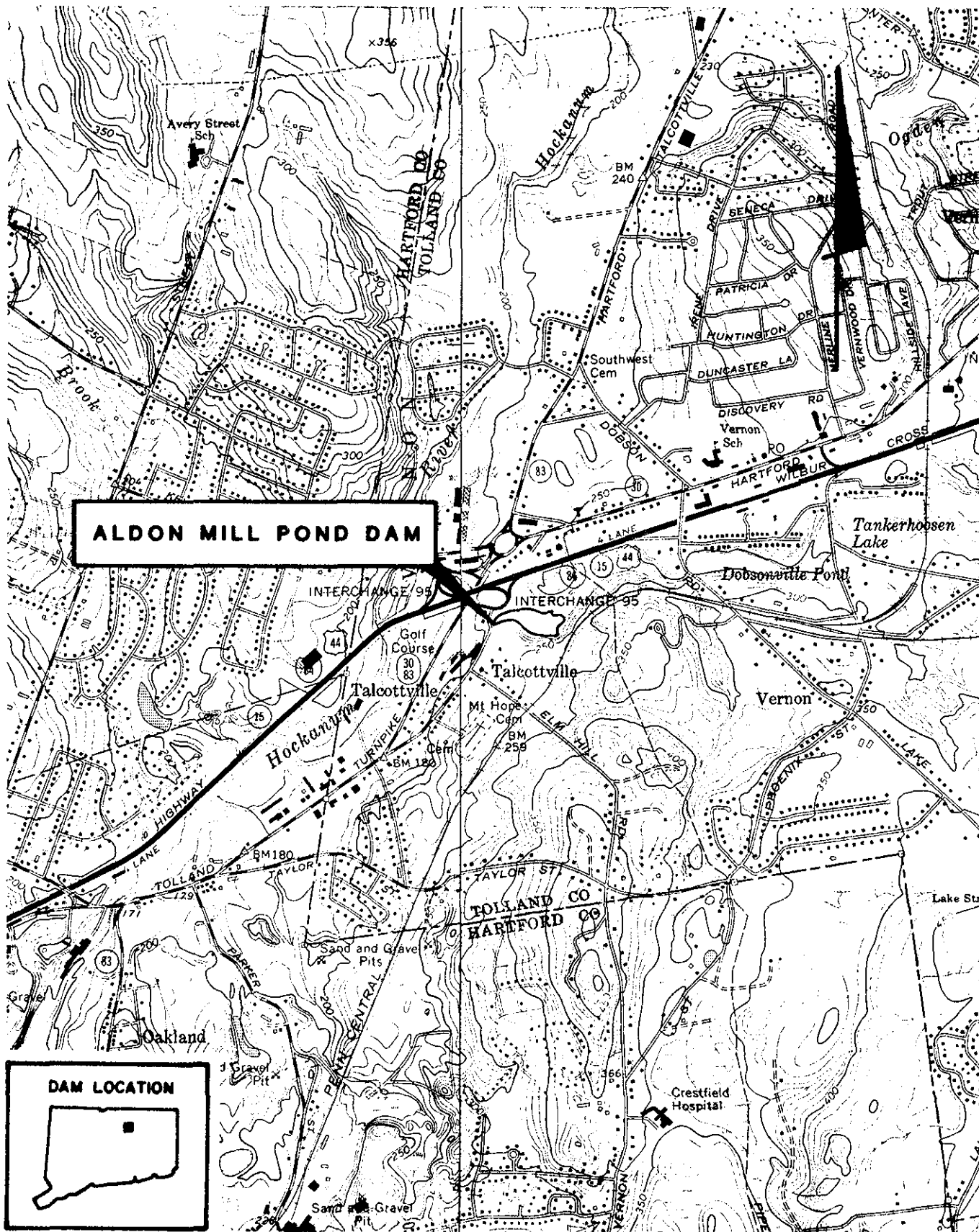
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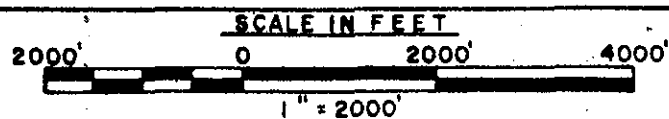
ALDON MILL POND DAM





QUADRANGLE: MANCHESTER, CT / ROCKVILLE, CT

US ARMY, CORPS OF ENGINEERS  
NEW ENGLAND DIVISION  
WALTHAM, MASS.



LOCATION MAP

PHASE I INSPECTION REPORT  
ALDON MILL POND DAM CT 00622

SECTION 1 - PROJECT INFORMATION

1.1 General

a. Authority - Public Law 92-367, August 8, 1972 authorized the Secretary of the Army, through the Corps of Engineers, to initiate a National Program of Dam Inspection throughout the United States. The New England Division of the Corps of Engineers has been assigned the responsibility of supervising the inspection of dams within the New England Region. Storch Engineers has been retained by the New England Division to inspect and report on selected dams in the State of Connecticut. Authorization and notice to proceed were issued to Storch Engineers under a letter of October 30, 1980 from William E. Hodgson, Jr., Colonel, Corps of Engineers. Contract No. DACW33-80-C-0035 has been assigned by the Corps of Engineers for this work.

b. Purpose of Inspection -

(1) Perform technical inspection and evaluation of non-Federal dams to identify conditions which threaten the public safety and thus permit correction in a timely manner by non-Federal interests.

(2) Encourage and prepare the states to initiate quickly effective dam safety programs for non-Federal dams.

(3) To update, verify and complete the National Inventory of Dams.

1.2 Description of Project

a. Location - Aldon Mill Pond Dam is located in the Town of Vernon, Tolland County, Connecticut. The dam and pond are located just south of Interstate 86 at interchange 95 in Talcottville. The coordinates of the dam are approximately

41°-49.2' north latitude and 72°-29.9' west longitude. The dam is located on the Tankerhoosen River and is approximately 3,100 feet upstream from its confluence with the Hockanum River.

b. Description of Dam and Appurtenances - Aldon Mill Pond Dam is a stone masonry and earth embankment approximately 95 feet long and 25.5 feet high. The downstream face is vertical stone masonry with a concrete buttress center section on a 1:2.5 slope. The top of the dam is approximately 6 feet wide and consist of concrete abutments and an earth embankment. The upstream face of the dam is earth and it was underwater so its slope could not be determined.

The spillway is located in the center of the dam and is 71.5 feet long. The weir is about 8 feet wide and is comprised of a 3-inch concrete cap on top of masonry. The central 34 feet of the downstream face below the spillway consists of the above mentioned concrete buttress projecting out from the stone masonry. The spillway abutments rise approximately 5.5 feet to the top of the dam.

There is a concrete inlet structure to the southeast of the dam with a bar rack at the entrance. It has been filled in with dirt and debris covers the gate. The sluiceway leading to a downstream factory has also been abandoned and filled in. There is no low-level discharge pipe. There is, however, a 30 inch pipe gravity fed into the downstream factory where the water is pumped into a water tower for fire protection. When in operation, the drawdown rate out of the tower is 1,000 gpm.

c. Size Classification - Aldon Mill Pond Dam has a maximum height of 25.5 feet and a capacity of approximately 87 acre-feet at the top of the dam. In accordance with the Recommended Guidelines for Safety Inspection of Dams established by the Corps of Engineers, the dam is classified as SMALL (height less than 40 feet, storage less than 1,000 acre-feet).

d. Hazard Classification - Aldon Mill Pond Dam is classified as having a SIGNIFICANT hazard potential. Failure of the dam could result in the possible loss of a few lives and cause appreciable property damage. Approximately 200 feet downstream, the flood wave would hit a factory complex. The first building in the complex which would be struck by the floodwave contains offices while the remaining buildings are for manufacturing and storage. The first floor sill of the factory is approximately 8 feet above the streambed. Estimated flow and water depth at this location just prior to dam failure is 2,435 cfs and 7 feet and just after dam failure is 6,790 cfs and 10 feet. Therefore, the water level would rise approximately 2 feet above the first floor sill.

e. Ownership - Aldon Mill Pond Dam is owned by:

Aldon Associates, Inc.  
1 Court Street  
Rockville, Connecticut 06066  
(203) 875-6291

f. Operator - Operating personnel are under the direction of:

AMF Cuno Division  
47 Main Street  
Talcottville, Connecticut 06066  
(203) 646-5212

g. Purpose of Dam - The dam originally supplied power to Aldon Mill but is no longer used for power supply. The pond water is presently pumped into a water tower that is used for fire protection. The only other use of the pond is for recreation.

h. Design and Construction History - Aldon Mill Pond Dam was constructed around 1920. No documentation is available on the design or construction of the dam.

i. Normal Operational Procedures - The inlet structure and sluiceway have been filled in and the gate is inoperable. Water is fed from the pond

into the factory through a 30 inch pipe where it is then pumped to the water tower. There is no control of the pond water level other than from the factory. The amount of water that can be drawn by the factory's fire system is limited to 1,000 gpm.

### 1.3 Pertinent Data

a. Drainage Area - The Aldon Mill Pond drainage basin is located in the Towns of Manchester, Bolton, Vernon and Tolland, Connecticut and is irregular in shape. The area of the drainage basin is 12.6 square miles (Appendix D - Plate 4). Less than 5 percent of the drainage basin is natural storage and 70 percent is undeveloped. The topography is rolling with elevations ranging from approximately 960 (NGVD) to 203.0 (NGVD) at the spillway crest.

b. Discharge at Damsite - There are no records available for discharge at the dam.

(1) Outlet works (conduit) size:	30 inch
Invert elevation (feet above NGVD):	200.5
Discharge Capacity at top of dam:	2.2 cfs
(2) Maximum known flood at damsite:	unknown
(3) Ungated spillway capacity at top of dam:	2,435 cfs
Elevation (NGVD):	208.5
(4) Ungated spillway capacity at test	
flood elevation:	2,470 cfs
Elevation (NGVD):	208.7
(5) Gated spillway capacity at normal pool	
elevation:	N/A
Elevation (NGVD):	N/A

(6)	Gated spillway capacity at test flood elevation:	N/A
	Elevation (NGVD):	N/A
(7)	Total Spillway capacity at test flood elevation:	2,470 cfs
	Elevation (NGVD):	208.7
(8)	Total project discharge at top of dam:	2,435 cfs
	Elevation (NGVD):	208.5
(9)	Total project discharge at test flood elevation:	2,500 cfs
	Elevation (NGVD):	208.7
c.	Elevation (feet above NGVD)	
(1)	Streambed at toe of dam:	183.0
(2)	Bottom of cutoff:	unknown
(3)	Maximum tailwater:	191.6
(4)	Normal pool:	203.5
(5)	Full flood control pool:	N/A
(6)	Spillway crest (ungated):	203.0
(7)	Design surcharge (original design):	unknown
(8)	Top of dam:	208.5
(9)	Test flood surcharge:	208.7
d.	Reservoir (length in feet)	
(1)	Normal pool:	1,150
(2)	Flood control pool:	N/A
(3)	Spillway crest pool:	1,150

	(4) Top of dam:	1,400
	(5) Test flood pool:	1,600
e.	Storage (acre-feet)	
	(1) Normal pool:	37
	(2) Flood control pool:	N/A
	(3) Spillway crest pool:	37
	(4) Top of dam:	87
	(5) Test flood pool:	90
f.	Reservoir Surface (acres)	
	(1) Normal pool:	7
	(2) Flood control pool:	N/A
	(3) Spillway crest:	7
	(4) Test flood pool:	11
	(5) Top of dam:	11
g.	Dam	
	(1) Type:	stone masonry with concrete buttress and earth embankment
	(2) Length:	95 feet
	(3) Height:	25.5 feet
	(4) Top width:	6 feet
	(5) Side slopes:	vertical at masonry portion/ 1:2.5 at concrete wall/ unknown at upstream earth embankment

(6) Zoning:	unknown
(7) Impervious core:	unknown
(8) Cutoff:	unknown
(9) Grout curtain:	unknown
(10) Other:	N/A
h. Diversion and Regulating Tunnel	N/A
i. Spillway	
(1) Type:	masonry broad crested weir
(2) Length of weir:	71.5 feet
(3) Crest elevation	203.0
(4) Gates:	N/A
(5) U/S channel:	none
(6) D/S channel:	natural channel
(7) General:	N/A
j. Regulating Outlets	
(1) Invert elevation (NGVD):	200.5
(2) Size:	30 inches
(3) Description:	Metal pipe
(4) Control Mechanism:	None
(5) Other:	Water is pumped into a fire tower



## SECTION 2 - ENGINEERING DATA

### 2.1 Design Data

No design computations or drawings are available for this dam.

### 2.2 Construction Data

The dam was constructed around 1920. No construction drawings or data are available for this dam. The sluiceway inlet structure and sluiceway were filled in some time before 1970.

### 2.3 Operation Data

The pond originally supplied power to Aldon Mill but is no longer used for that purpose. Presently, the pond water is pumped from the factory to a water tower and is used for fire protection. No low-level discharge pipe exists.

### 2.4 Evaluation of Data

- a. Availability - No design or construction data is available. Limited operation data is available for this dam.
- b. Adequacy - Since no information is available, a visual inspection and hydraulic/hydrologic assumptions were used to assess the condition of the facility.
- c. Validity - The conclusions and recommendations found in this report are based on a visual inspection and hydraulic/hydrologic assumptions.

## SECTION 3 - VISUAL INSPECTION

### 3.1 Findings

a. General - A visual inspection was conducted on November 6, 1980 by members of the engineering staff of Storch Engineers, D. Baugh and Associates, Inc. and Matthews Associates. A copy of the visual inspection checklist is contained in Appendix A of this report. Selected photos of the dam are contained in Appendix C.

In general, the overall condition of the dam and its appurtenant structures is FAIR.

b. Dam - The dam is a stone masonry and earth embankment structure with a concrete buttress covering a portion of the downstream face as shown on the Overview Photo and Photo 1 (Appendix C). The abutments are stone masonry capped with concrete and are in good condition (Photos 3 and 4). There is a 36 inch diameter stump adjacent to and upstream of the northwest abutment and there are several small trees growing from the downstream face of the embankment and the northwest abutment (Photos 3 and 7). Stones are missing from the masonry of the downstream face at several locations (Photos 2 and 4, see Photo Location Plan - Plate 3 for location). No seepage was observed. The upstream earth embankment is completely underwater.

There is some brush around the abutments. Frequent trespassing is evident from the compacted earth around the northwest abutment.

c. Appurtenant Structures - The spillway is 71.5 feet long and consists of a 3-foot concrete cap on top of the stone masonry (Photos 1 and 3). The concrete cap is cracking near the southeast abutment. The cracks are minor. They range in length from 1 to 2.5 feet and are approximately 1/16 inch wide. There are leaves and debris along the length of the spillway.

A scour hole approximately 2 feet deep presently exists at the toe of the spillway (Photo 1 - see Photo Location Plans - Photo 2 for dimension).

The middle section of the spillway is supplemented by a concrete buttress projecting from the downstream masonry face and sloping at 1:2.5 to the toe of the dam (Photo 1). The width of the weir increases to 10 feet at this location. The concrete is in good condition with only minor spalling.

There is an inlet structure with a bar rack at its entrance on the southeast side of the dam (Photos 5 and 6). The structure and sluiceway to a downstream factory have been filled in.

d. Reservoir Area - The area immediately adjacent to the pond is bordered on the north side by a stone wall that is approximately the same height as the abutments. The wall is in good condition although several trees are growing adjacent to it. Due to a low point upstream of the dam and north of the abutment a rise in the water level of the pond could inundate one property behind the northwest abutment. Inundation, however, would be limited to flowing over a grassed section of lawn.

e. Downstream Channel - The downstream channel is natural and comprised of rock and gravel (Photo 8). The overbank area adjacent to the downstream channel is grass, brush and trees.

### 3.2 Evaluation

Overall the general condition of the dam is FAIR. The visual inspection revealed several items that led to this assessment, such as:

- a. Several trees growing from and a stump adjacent to the northwest abutment;
- b. Missing stones in the downstream masonry face;
- c. A scour hole at the toe of the spillway;

- d. The absence of a low-level discharge pipe;
- e. Cracking of a small section of the concrete spillway cap.

## SECTION 4 - OPERATIONAL AND MAINTENANCE PROCEDURES

### 4.1 Operational Procedures

a. General - The original purpose of this facility was to supply power to Aldon Mill but this function was abandoned sometime ago. The water is now used for fire protection by pumping it into a water tower. Control of the water level in the pond is accomplished only by this means.

b. Description of Any Warning System in Effect - There is no formal warning system in effect for this dam.

### 4.2 Maintenance Procedures

a. General - There is no specific maintenance program for this dam.

b. Operating Facilities - The gate inlet structure is filled in and the sluice gate is inaccessible. Water is piped into the factory where it is pumped to a water tower.

### 4.3 Evaluation

There is no regularly scheduled maintenance program. A systematic and complete maintenance program should be instituted at the dam and a formal warning system should be developed.

## SECTION 5 - EVALUATION OF HYDRAULIC/HYDROLOGIC FEATURES

### 5.1 General

Aldon Mill Pond Dam is a stone masonry and earth embankment dam approximately 95 feet long and 25.5 feet high. The majority of the downstream face is stone masonry with a concrete buttress covering the center of the downstream face. There is a 71.5 foot long spillway that spans the center portion of the dam. A gate inlet structure and sluiceway to the southeast of the dam is filled in and no longer in use.

The watershed encompasses 12.6 square miles and is approximately 70 percent undeveloped. The topography is rolling with terrain rising 757 feet from the spillway crest.

The pond has a capacity of approximately 37 acre-feet at the spillway crest and approximately 87 acre-feet at the top of the dam.

### 5.2 Design Data

No design data for the original dam is available.

### 5.3 Experience Data

No historical data for recorded discharges or water surface elevations are available for this dam, however, the dam has withstood the past major floods such as; March 1936, September 1938 and August 1955 as well as the more recent floods of January and February 1978 and January 1979. The flood of record for this area occurred in September 1938.

### 5.4 Test Flood Analysis

Based on the Recommended Guidelines for Safety Inspection of Dams, the dam is classified as a SMALL structure with a SIGNIFICANT hazard potential. The test flood for these conditions ranges from the 100-year flood to 1/2 the probable maximum flood (PMF). The 100-year flood was used because of the dam's small size.

The test flood inflow was calculated using an equation found in the Connecticut Department of Transportation's Hydraulics and Drainage Manual (1973). This formula was developed as a means for calculating flow throughout the State and is based on USGS gaging stations. The test flood inflow by this method is 2,520 cfs, equivalent to 200 csm.

The routing procedure developed by the Corps of Engineers gives an approximate outflow of 2,500 cfs. The spillway capacity of the dam is approximately 2,435 cfs or 97 percent of the test flood outflow. As a result, the test flood will overtop the dam by 0.2 feet.

The water level behind the dam is basically uncontrolled and therefore storage behind the dam was assumed to begin at the elevation of the spillway crest. Storage was determined by an average area depth analysis. Capacity curves for the spillway assumed a broad crested weir.

#### 5.5 Dam Failure Analysis

A dam failure analysis was performed using the Rule of Thumb method in accordance with guidelines established by the Corps of Engineers. Failure was assumed to occur when the water level in the pond was at the top of the dam.

The spillway discharge just prior to dam failure is 2,435 cfs and the calculated dam failure discharge is 7,190 cfs.

Failure of Aldon Mill Pond Dam could result in the possible loss of a few lives and cause appreciable damage. About 200 feet downstream from the dam is a factory complex located adjacent to the river. The first building in the complex be hit by the floodwave contains offices. The remaining buildings which would be affected to a lesser degree are used for manufacturing and storage (See Photo 8). The first floor sill of the factory is approximately 8 feet above the streambed. Estimated flow and water depth at this location just prior

to dam failure is 2,435 cfs and 7 feet and just after dam failure is 6,790 cfs and 10 feet. Therefore, the water level would rise approximately 2 feet above the first floor sill of the factory.

The available mapping and a downstream field inspection indicates there is no hazard potential beyond this point. Water from the floodwave will spread out over the broad flood plain of the Hockanum River.



## SECTION 6 - EVALUATION OF STRUCTURAL STABILITY

### 6.1 Visual Observations

The general structural stability of the dam is good. The vertical, horizontal and lateral alignments are good; however, in a few places stones are missing from the downstream face. Small trees are growing from the downstream masonry face below the northwest abutment and on the upstream face of the northwest abutment. A large stump is at the base of and partly in the northwest abutment. The concrete buttress is in good condition and provides additional support. The upstream earthen face is completely under water. There is minor cracking on a portion of the concrete spillway cap and some minor spalling of the concrete buttress.

The scour hole at the toe of the spillway could lead to structural instability if left untreated.

### 6.2 Design and Construction Data

The dam was constructed around 1920. No design or construction documentation is available.

### 6.3 Post-Construction Changes

The only definitely known post-construction change was the filling in of the gate inlet structure; however, indications are that the concrete buttress was probably added at a later date.

### 6.4 Seismic Stability

The dam is located in Seismic Zone 1 and in accordance with Recommended Phase I Guidelines does not warrant a seismic analysis.

## SECTION 7 - ASSESSMENT, RECOMMENDATIONS AND REMEDIAL MEASURES

### 7.1 Dam Assessment

a. Condition - After considering the available information, the results of the inspection, contacts with the owner and hydraulic/hydrologic computations, the general condition of Aldon Mill Pond Dam is assessed as FAIR.

b. Adequacy of Information - The information available was such that an assessment of the safety of the dam was based on the available data, the visual inspection results, and computations developed for this report.

c. Urgency - It is suggested that the recommendations and remedial measures suggested below be implemented within one year after receipt of this Phase I Inspection Report.

### 7.2 Recommendations

The following recommendations should be carried out under the direction of a qualified registered engineer.

a. Trees and stumps including any root systems should be removed from the dam and backfilled with proper material.

b. The effect of the missing stones from the downstream face should be investigated and if it is deemed necessary, the stones should be replaced.

c. The scour hole at the toe of the spillway should be stabilized.

d. The feasibility of installing a low-level discharge pipe should be determined.

### 7.3 Remedial Measures

a. Operation and Maintenance Procedures -

- (1) Remove brush from around the embankments;
- (2) Clear the spillway of debris;
- (3) Repair cracked and spalled concrete;

- (4) Institute a program of annual technical inspection by a qualified engineer;
- (5) Develop plans for surveillance during periods of unusually heavy rains and institute a formal downstream warning system for use in the event of an emergency.

#### 7.4 Alternatives

There are no practical alternatives to the above recommendations.

APPENDIX A  
INSPECTION CHECK LIST

# INSPECTION CHECK LIST

## PARTY ORGANIZATION

PROJECT Aldon Mill Pond Dam

DATE 11/6/80

TIME 9:00 a.m.

WEATHER Sunny, 50's

W.S. ELEV. \_\_\_\_\_ U.S. \_\_\_\_\_ DN.S. \_\_\_\_\_

### PARTY:

- |  |                                       |
|--|---------------------------------------|
| 1. <u>Gary Giroux, S.E. Hyd./Struct.</u> | 6. <u>Mike Quatromoni, DBA, Civil</u> |
| 2. <u>Hermann Hani, S.E., Technician</u> | 7. _____                              |
| 3. <u>Ben Cohen, S.E., Civil</u>         | 8. _____                              |
| 4. <u>Mike Pozzato, MA., Mechanical</u>  | 9. _____                              |
| 5. <u>Peter Austin, DBA, Civil</u>       | 10. _____                             |

PROJECT FEATURE	INSPECTED BY	REMARKS
1. <u>Dam Embankment</u>	P. Austin M. Quatromoni	Fair
2. <u>Mechanical</u>	M. Pozzato	Fair
3. <u>Spillway</u>	G. Giroux B. Cohen	Good
4. <u>Discharge Channel</u>	G. Giroux H. Hani	Good
5. _____	_____	_____
6. _____	_____	_____
7. _____	_____	_____
8. _____	_____	_____
9. _____	_____	_____
10. _____	_____	_____

# INSPECTION CHECK LIST

PROJECT Aldon Mill Pond Dam

DATE 11/6/80

PROJECT FEATURE

NAME

DISCIPLINE

NAME

AREA EVALUATED	CONDITIONS
<u>DAM EMBANKMENT</u>	
Crest Elevation	208.5 (NGVD)
Current Pool Elevation	203.2 (NGVD)
Maximum Impoundment to Date	Unknown
Surface Cracks	Several stones missing from face of dam below spillway
Pavement Condition	N/A
Movement or Settlement of Crest	None
Lateral Movement	None
Vertical Alignment	Good
Horizontal Alignment	Fair - some stones protruding from face of dam below spillway
Condition at Abutment and at Concrete Structures	Fair - large stump and small tree adjacent to northwest abutment
Indications of Movement of Structural Items on Slopes	N/A
Trespassing on Slopes	Problem
Vegetation on Slopes	Brush and small trees
Sloughing or Erosion of Slopes or Abutments	Negligible
Rock Slope Protection - Riprap Failures	N/A
Unusual Movement or Cracking at or near Toes	None
Unusual Embankment or Downstream Seepage	None observed
Piping or Boils	None
Foundation Drainage Features	None
Toe Drains	None
Instrumentation System	None

# INSPECTION CHECK LIST

PROJECT Aldon Mill Pond Dam

DATE 11/6/80

PROJECT FEATURE \_\_\_\_\_

NAME \_\_\_\_\_

DISCIPLINE \_\_\_\_\_

NAME \_\_\_\_\_

## AREA EVALUATED

## CONDITION

### CULLET WORKS - INTAKE CHANNEL AND INTAKE STRUCTURE

#### a. Approach Channel

N/A

Slope Conditions

Bottom Conditions

Rock Slides or Falls

Log Boom

Debris

Condition of Concrete Lining

Drains or Weep Holes

#### b. Intake Structure

Condition of Concrete

Stop Logs and Slots

# INSPECTION CHECK LIST

PROJECT Aldon Mill Pond Dam

DATE 11/6/80

PROJECT FEATURE \_\_\_\_\_

NAME \_\_\_\_\_

DISCIPLINE \_\_\_\_\_

NAME \_\_\_\_\_

AREA EVALUATED	CONDITION
<u>OUTLET WORKS - CONTROL TOWER</u>	N/A
a. Concrete and Structural	"
General Condition	"
Condition of Joints	"
Spalling	"
Visible Reinforcing	"
Rusting or Staining of Concrete	"
Any Seepage or Efflorescence	"
Joint Alignment	"
Unusual Seepage or Leaks in Gate Chamber	"
Cracks	"
Rusting or Corrosion of Steel	"
b. Mechanical and Electrical	"
Air Vents	"
Float Wells	"
Crane Hoist	"
Elevator	"
Hydraulic System	"
Service Gates	Sluice gate covered with dirt and leaves
Emergency Gates	
Lightning Protection System	
Emergency Power System	
Wiring and Lighting System in Gate Chamber	



**INSPECTION CHECK LIST**PROJECT Aldon Mill Pond DamDATE 11/6/80

PROJECT FEATURE \_\_\_\_\_

NAME \_\_\_\_\_

DISCIPLINE \_\_\_\_\_

NAME \_\_\_\_\_

AREA EVALUATED	CONDITION
<u>OUTLET WORKS - TRANSITION AND CONDUIT</u>	N/A
General Condition of Concrete	"
Rust or Staining on Concrete	"
Spalling	"
Erosion or Cavitation	"
Cracking	"
Alignment of Monoliths	"
Alignment of Joints	"
Numbering of Monoliths	"

# INSPECTION CHECK LIST

PROJECT Aldon Mill Pond Dam

DATE 11/6/80

PROJECT FEATURE \_\_\_\_\_

NAME \_\_\_\_\_

DISCIPLINE \_\_\_\_\_

NAME \_\_\_\_\_

AREA EVALUATED	CONDITION
<u>OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS</u>	
a. Approach Channel	
General Condition	Unknown - underwater
Loose Rock Overhanging Channel	None
Trees Overhanging Channel	None
Floor of Approach Channel	Underwater
b. Weir and Training Walls	
General Condition of Concrete	Stone walls and stone and concrete abutments in good condition. Spillway cap cracking on one spot.
Rust or Staining	None
Spalling	Minor spalling of spillway cap
Any Visible Reinforcing	None
Any Seepage or Efflorescence	None observed
Drain Holes	None
c. Discharge Channel	
General Condition	Good
Loose Rock Overhanging Channel	None
Trees Overhanging Channel	Few
Floor of Channel	Good
Other Obstructions	

# INSPECTION CHECK LIST

PROJECT Aldon Mill Pond Dam

DATE 11/6/80

PROJECT FEATURE \_\_\_\_\_

NAME \_\_\_\_\_

DISCIPLINE \_\_\_\_\_

NAME \_\_\_\_\_

AREA EVALUATED	CONDITION
<u>OUTLET WORKS - OUTLET STRUCTURE AND OUTLET CHANNEL</u>	N/A
General Condition of Concrete	"
Rust or Staining	"
Spalling	"
Erosion or Cavitation	"
Visible Reinforcing	"
Any Seepage or Efflorescence	"
Condition at Joints	"
Drain holes	"
Channel	"
Loose Rock or Trees Overhanging Channel	"
Condition of Discharge Channel	"

# INSPECTION CHECK LIST

PROJECT Aldon Mill Pond Dam

DATE 11/6/80

PROJECT FEATURE

NAME

DISCIPLINE

NAME

## AREA EVALUATED

## CONDITION

### OUTLET WORKS - SERVICE BRIDGE

N/A

#### a. Super Structure

Bearings

"

Anchor Bolts

"

Bridge Seat

"

Longitudinal Members

"

Under Side of Deck

"

Secondary Bracing

"

Deck

"

Drainage System

"

Railings

"

Expansion Joints

"

Paint

"

#### b. Abutment & Piers

"

General Condition of Concrete

"

Alignment of Abutment

"

Approach to Bridge

"

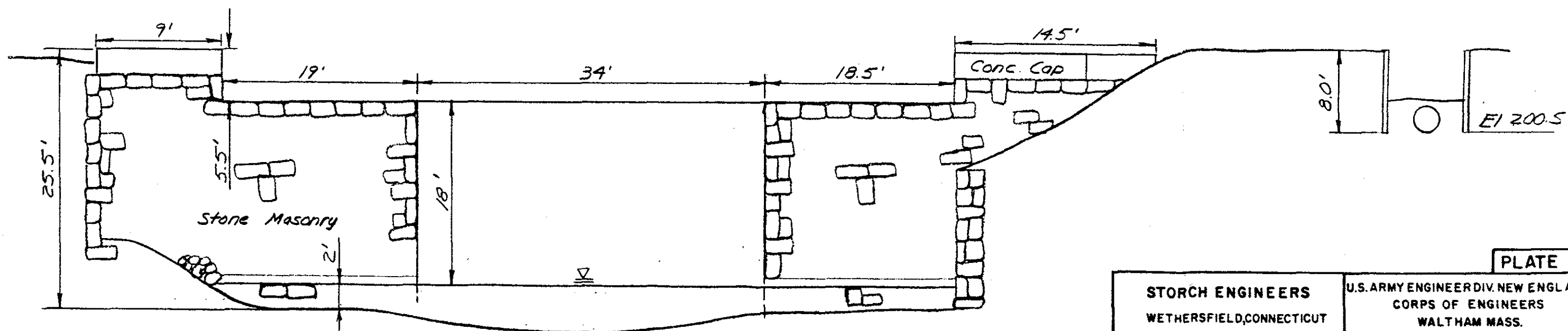
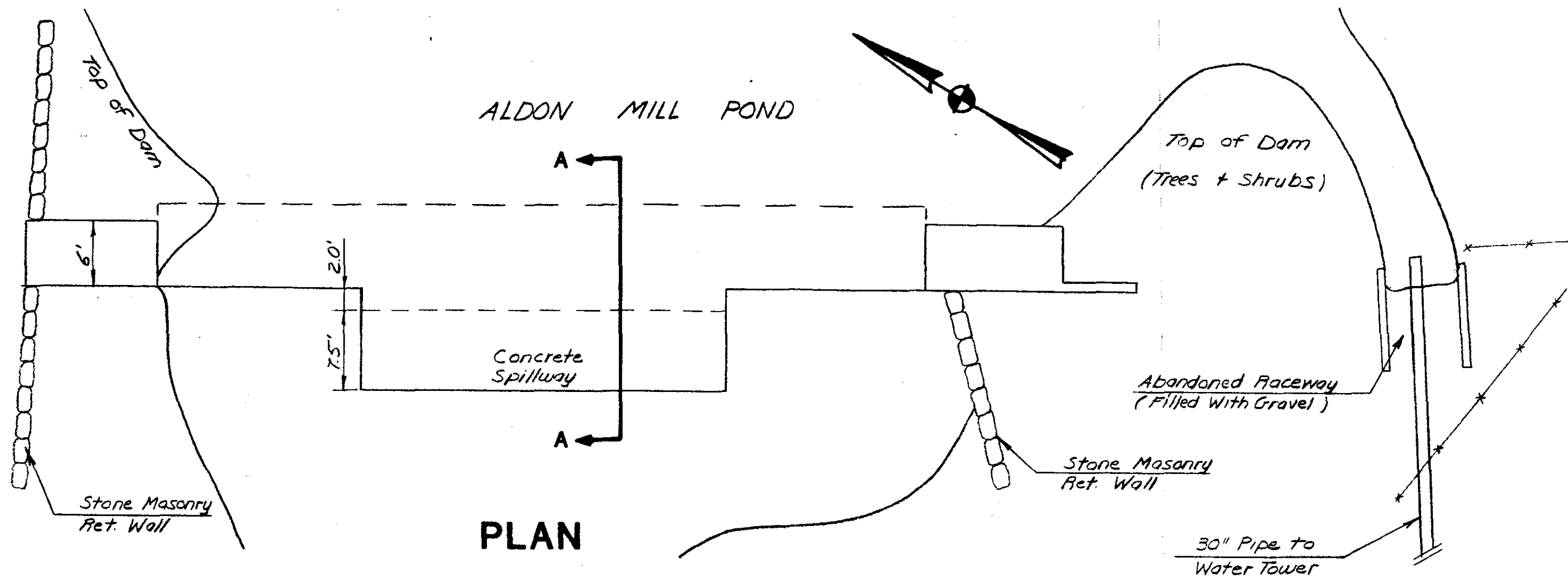
Condition of Seat & Backwall

"

APPENDIX B  
ENGINEERING DATA

Any information pertaining to the history, maintenance and past inspection reports are located at:

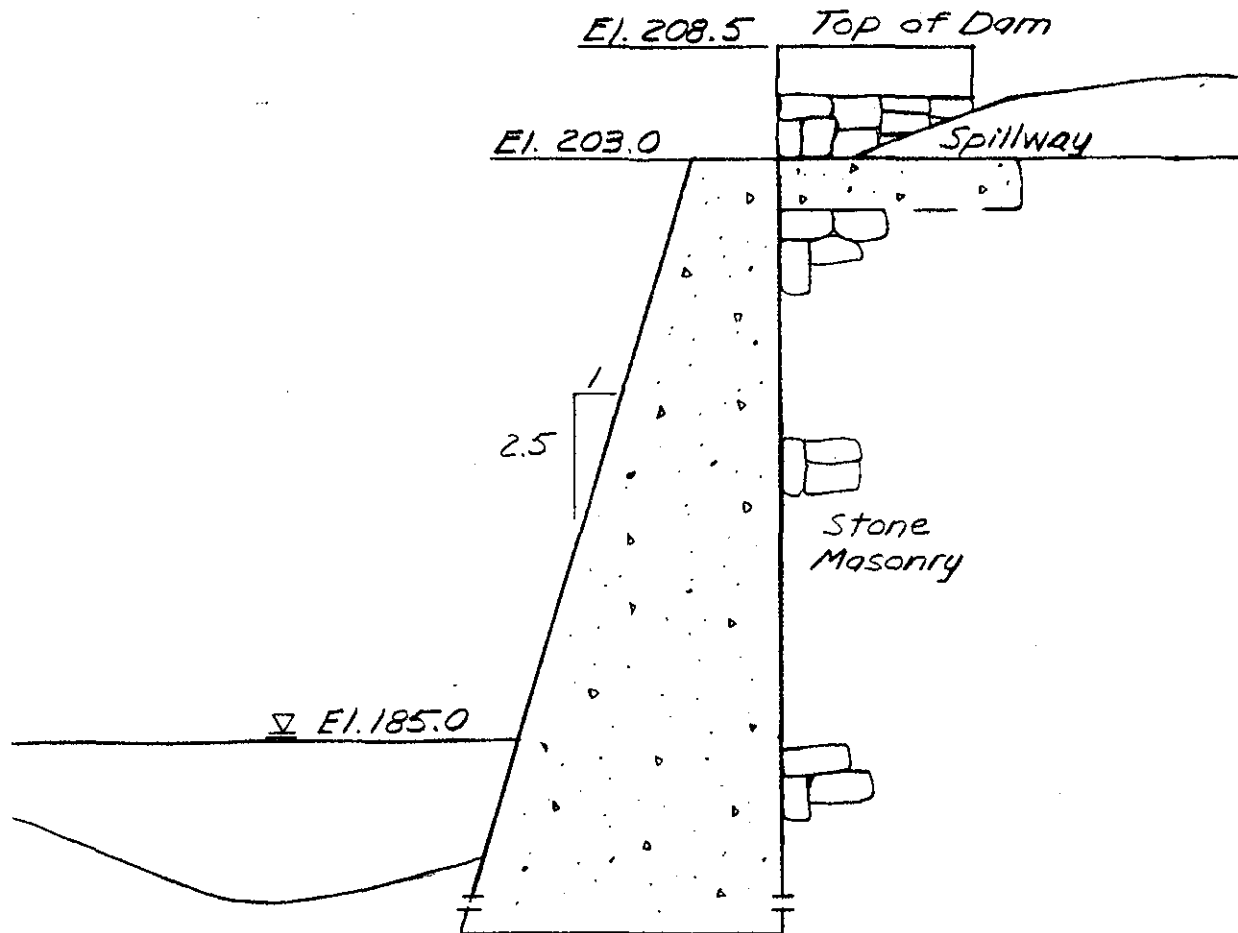
State of Connecticut  
Department of Environmental  
Protection  
Water Resources Unit  
State Office Building  
Hartford, Connecticut 06115



NOT TO SCALE

		PLATE 1	
STORCH ENGINEERS WETHERSFIELD, CONNECTICUT		U.S. ARMY ENGINEER DIV. NEW ENGLAND CORPS OF ENGINEERS WALTHAM MASS.	
NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS			
ALDON MILL POND DAM			
		SCALE: AS SHOWN	
		DATE: MARCH 1981	

PLATE 1



## SECTION A-A

PLATE 2

STORCH ENGINEERS  
WETHERSFIELD, CONNECTICUT

U.S. ARMY ENGINEER DIV. NEW ENGLAND  
CORPS OF ENGINEERS  
WALTHAM MASS.

NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS

ALDON MILL POND DAM

NOT TO SCALE

SCALE: AS SHOWN

DATE: MARCH 1981



APPENDIX C  
PHOTOGRAPHS







PHOTO 1  
SPILLWAY



PHOTO 2  
MASONRY BELOW SPILLWAY





PHOTO 3

NORTHWEST ABUTMENT



PHOTO 4

SOUTHEAST ABUTMENT - DOWNSTREAM MASONRY





PHOTO 5

INLET STRUCTURE - LOOKING UPSTREAM



PHOTO 6

INLET STRUCTURE - UPSTREAM FACE OF DAM





PHOTO 7  
UPSTREAM FACE OF DAM



PHOTO 8  
DOWNSTREAM CHANNEL

APPENDIX D  
HYDRAULIC/HYDROLOGIC COMPUTATIONS





**LIMIT OF DRAINAGE BASIN**

**PLATE 4**

**STORCH ENGINEERS**  
WETHERSFIELD, CONNECTICUT

**U.S. ARMY ENGINEER DIV. NEW ENGLAND**  
**CORPS OF ENGINEERS**  
WALTHAM MASS.

**NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS**

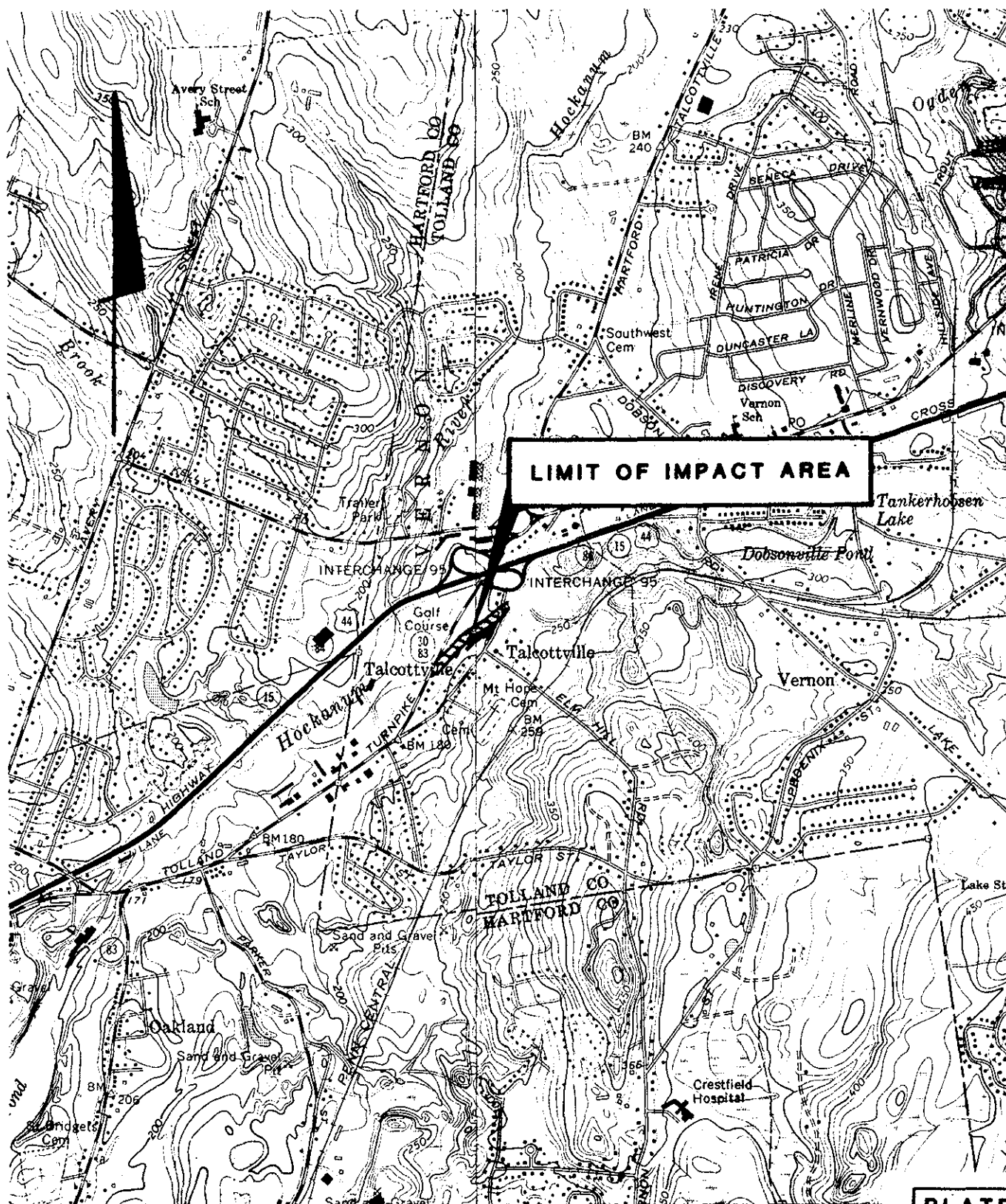
**ALDON MILL POND DAM**

**1:48000**

**SCALE: AS SHOWN**

**DATE MARCH 1981**





**PLATE 5**

STORCH ENGINEERS  
WETHERSFIELD, CONNECTICUT

U.S. ARMY ENGINEER DIV. NEW ENGLAND  
CORPS OF ENGINEERS  
WALTHAM MASS.

NATIONAL PROGRAM OF INSPECTION OF NON-FED DAMS

# **ALDON MILL POND DAM**

1:24000

SCALE: AS SHOWN

DATE: MARCH 1981

Determination of Test Flood

NAME OF DAM: Aldon Mill Pond Dam

DRAINAGE AREA: 8,073 Ac, 12.6 SM

INFLOW Size: Small

Hazard: Significant

Test Flood: 100 yr.

$$Q_{100} = 340A^{.79} = 340(12.6)^{.79} = 2,520$$

Estimating the effect of surcharge storage on the Maximum Test Flood

1.  $Q_{p1} = \underline{2,520}$  cfs

2a.  $H_1 = \underline{5.65'}$  (elev.)

b.  $STOR_1 = \underline{.08}$  in

c.  $Q_{p2} = Q_{p1} (1 - STOR_1/4.9)^* = \underline{2,479}$  cfs

3a.  $H_2 = \underline{5.65'}$   $STOR_2 = \underline{.08}$  in

b.  $STOR_A = \underline{.08}$

$Q_{pA} = \underline{2,500}$  cfs

$H_A = \underline{5.65'}$   $STOR_A = \underline{.08}$  in

Test Flood = 2,500 cfs

Capacity of the spillway when the pond elevation is at the top of the dam

$Q = \underline{2,435}$  cfs or 97.4 % of the Test Flood

\* 4.9 - 100 year runoff

**STORCH ENGINEERS**  
Engineers - Landscape Architects  
Planners - Environmental Consultants

JOB Phase I Dam Inspection 4463

SHEET NO. \_\_\_\_\_ OF \_\_\_\_\_

CALCULATED BY BDC DATE 11/25/80

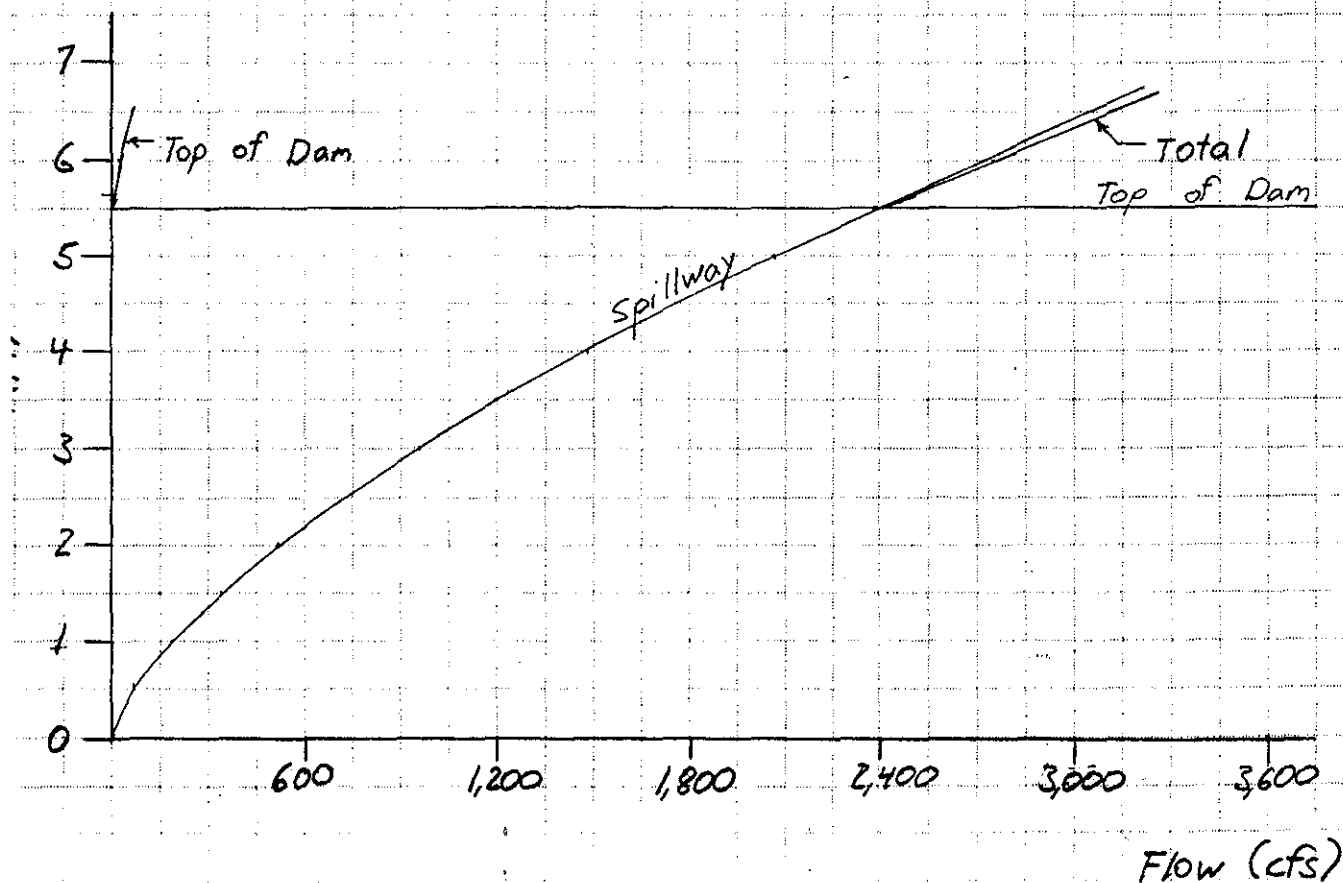
CHECKED BY GJG DATE 1/12/81

**Stage Discharge**

NAME OF DAM Aldon Mill Pond Dam

$Q = CLH^{3/2}$

Elev	Spillway I				Spillway II				Dam				QT
	C	L	H	Q	C	L	H	Q	C	L	H	Q	
		71.5	0	0									
2.63			0.5	66									66
2.68			1.0	192									192
2.66			1.5	349									349
2.64			2.0	533									533
			3.0	981									981
			4.0	1,493									1,493
			5.0	2,110									2,110
			5.5	2,435						23.5	0	0	2,435
			6.0	2,774					2.70		0.5	22	2,796
			6.5	3,128					2.63		1.0	62	3,190



D2

**STORCH ENGINEERS**  
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Planners - Environmental Consultants

JOB Phase I Dam Inspection 4463

SHEET NO. \_\_\_\_\_ OF \_\_\_\_\_

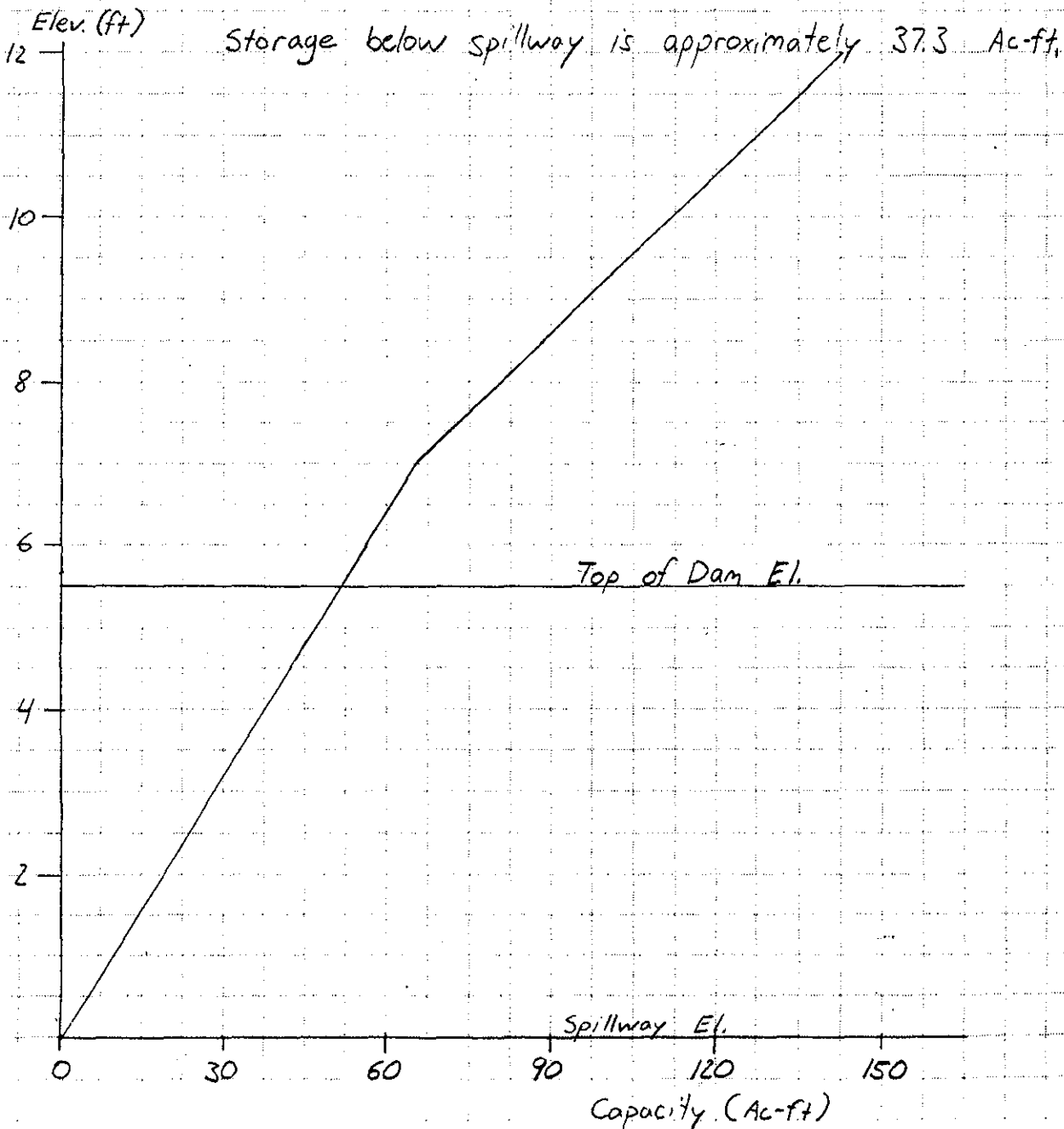
CALCULATED BY BDC DATE 12/30/80

CHECKED BY E.G. DATE 1/13/81

**AREA - CAPACITY**

Name of Dam: Aldon Mill Pond Dam

ELEV	DEPTH	AREA	AVG. AREA	VOL	Σ VOL
0.0		6.9			
7.0	7.0		9.3	64.8	
		11.6			64.8
12.0	5.0		15.4	77.0	
		19.2			141.8



Downstream Hydrographs

"Rule of Thumb" Guidance for Estimating Downstream Failure Hydrographs

NAME OF DAM Aldon Mill Pond Dam

Section I at Dam

1.  $S = \frac{87}{27} \text{ Acft}$
2.  $Q_{p1} = \frac{8}{27} W_b \sqrt{g} Y^{3/2} = \frac{8}{27} (33.2) \sqrt{32.2} (25.5)^{1.5} = 7190$
3. See Sections

Section II at

- 4a.  $H_2 = \underline{11.0'}$   $A_2 = \underline{830}$   $L_2 = \underline{100}$   $V_2 = \underline{1.9}$  Acft
- b.  $Q_{p2} = Q_{p1} (1 - V_2/S) = \underline{7033}$  cfs
- c.  $H_2 = \underline{10.9'}$   $A_2 = \underline{820}$   
 $A_A = \underline{825}$   $V_2 = \underline{1.9}$  Acft  
 $H = \underline{10.9'}$
- $Q_{p2} = 7190 (1 - 1.9/87) = 7033 \text{ cfs}$

Section III at

- 4a.  $H_3 = \underline{9.1'}$   $A_3 = \underline{1370}$   $L_3 = \underline{200}$   $V_3 = \underline{6.3}$  Acft
- b.  $Q_{p3} = Q_{p2} (1 - V_3/S) = \underline{6524}$  cfs
- c.  $H_3 = \underline{9.1'}$   $A_3 = \underline{1270}$   
 $A_A = \underline{1073}$   $V_3 = \underline{4.9}$  Acft  
 $H = \underline{9.1'}$
- $Q_{p3} = 7033 (1 - 4.9/87) = 6637 \text{ cfs}$

Section IV at

- 4a.  $H_4 = \underline{7.5'}$   $A_4 = \underline{1400}$   $L_4 = \underline{320}$   $V_4 = \underline{10.3}$  Acft
- b.  $Q_{p4} = Q_{p3} (1 - V_4/S) = \underline{5850}$  cfs
- c.  $H_4 = \underline{7.4'}$   $A_4 = \underline{1200}$   
 $A_A = \underline{1187}$   $V_4 = \underline{8.7}$  Acft  
 $H = \underline{7.4'}$
- $Q_{p4} = 6637 (1 - 8.7/87) = 5973 \text{ cfs}$

Section V at

4a.  $H_5 = 7.4'$   $A_5 = 1,220$   $L_5 = 640$   $V_5 = 12.9$  Acft

b.  $Q_{p5} = Q_{p4} (1 - V_5/S) = 4745$  cfs

c.  $H_5 = 7.2'$   $A_5 = 900$   
 $A_A = 1,119$   $V_5 = 16.4$  Acft

$Q_{p5} = 5973(1 - 16.4/87) = 4847$   $H = 7.2'$

Section VI at

4a.  $H_6 =$   $A_6 =$   $L_6 =$   $V_6 =$  Acft

b.  $Q_{p6} = Q_{p5} (1 - V_6/S) =$  cfs

c.  $H_6 =$   $A_6 =$   
 $A_A =$   $V_6 =$  Acft

Section VII at

4a.  $H_7 =$   $A_7 =$   $L_7 =$   $V_7 =$  Acft

b.  $Q_{p7} = Q_{p6} (1 - V_7/S) =$  cfs

c.  $H_7 =$   $A_7 =$   
 $A_A =$   $V_7 =$  Acft

$Q_{p7} =$

# STORCH ENGINEERS - STORCH ASSOCIATES

Engineers - Landscape architects  
Planners - Environmental Consultants

JOB \_\_\_\_\_

SHEET NO. \_\_\_\_\_

OF \_\_\_\_\_

CALCULATED BY BDC

DATE 11/20/80

CHECKED BY GJG

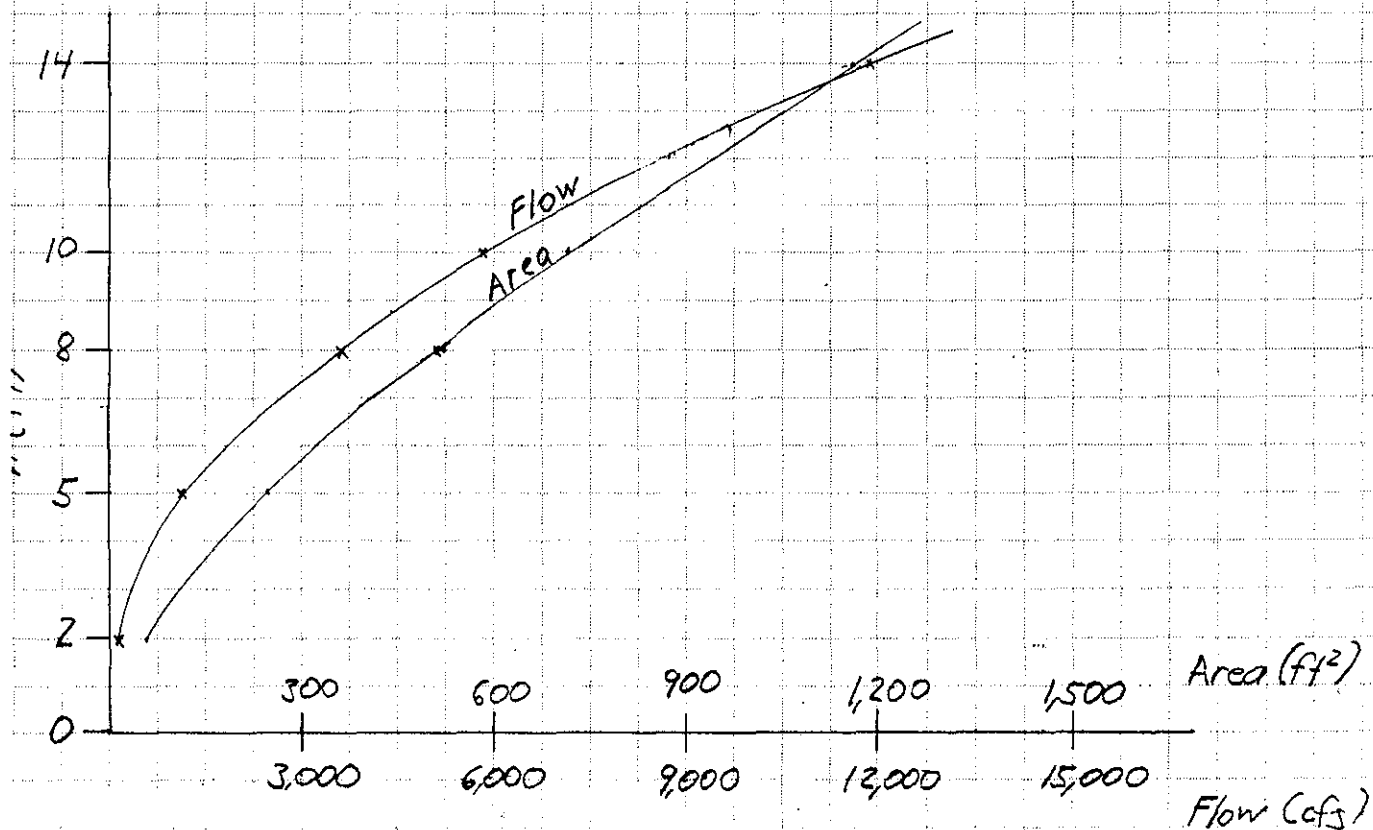
DATE 1/13/81

SCALE Section II

$S = 1.72\%$   
 $n = 0.06$

5'1"  
5'1"

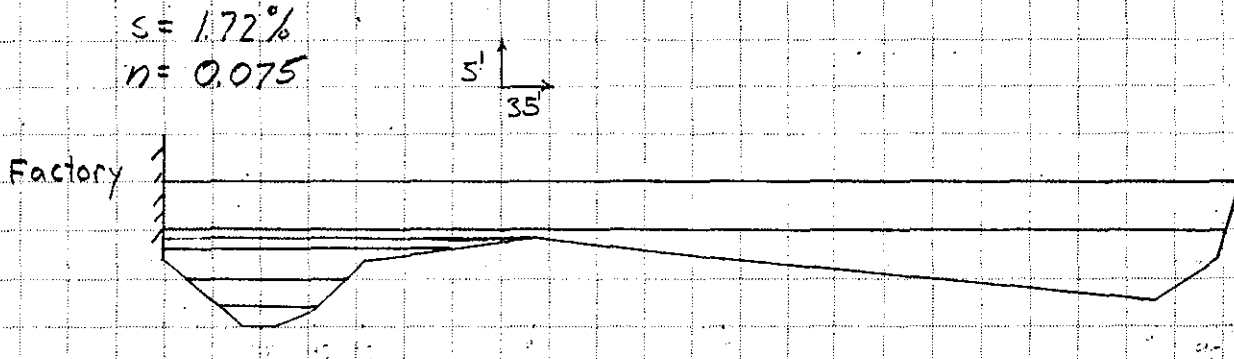
D	WP	A	R	$R^{2/3}$	$S^{1/2}$	V	Q
2	44	57	1.30	1.19	0.0928	2.74	156
5	86	248	2.88	2.03	"	4.68	1,161
8	98	517	5.28	3.03	"	6.99	3,611
10	108	715	6.62	3.53	"	8.39	5,819
14	123	1,155	9.39	4.45	"	10.26	11,850



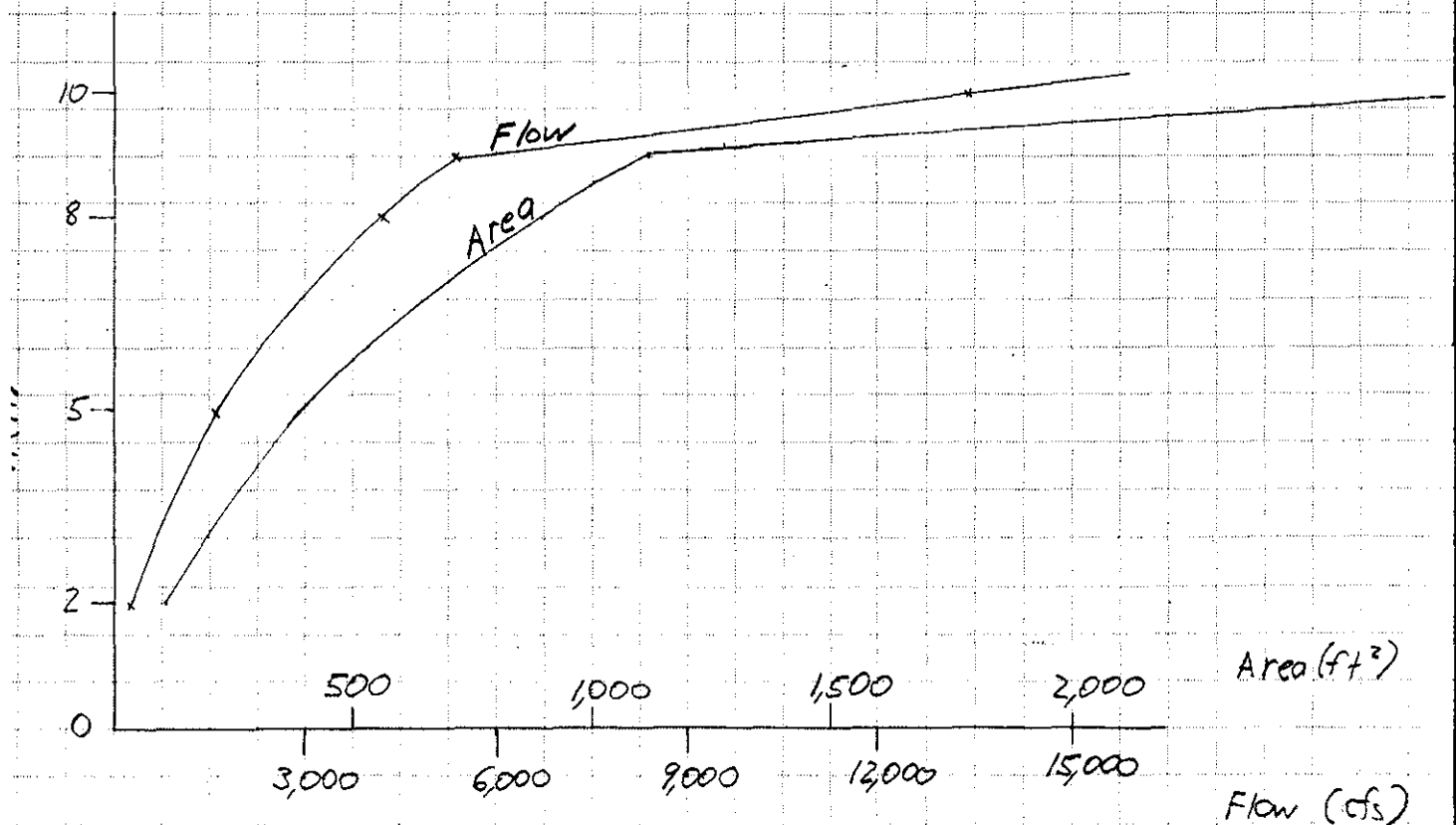
# STORCH ENGINEERS - STORCH ASSOCIATES

Engineers - Landscape architects  
Planners - Environmental Consultants

JOB Aldon Mill Pond Dam  
SHEET NO. \_\_\_\_\_ OF \_\_\_\_\_  
CALCULATED BY RDC DATE 11/20/80  
CHECKED BY GJG DATE 1/13/81  
SCALE Section III



D	WP	A	R	R <sup>3/2</sup>	S <sup>1/2</sup>	V	Q
2	70	109	1.56	1.34	0.0928	2.47	269
5	116	388	3.34	2.24	"	4.30	1,602
8	210	877	4.18	2.59	"	4.77	4,188
9	270	1,117	4.14	2.58	"	4.76	5,313
10	770	2,955	3.83	2.45	"	4.52	13,347



D7



# STORCH ENGINEERS - STORCH ASSOCIATES

Engineers - Landscape architects  
Planners - Environmental Consultants

JOB Aldon Mill Pond Dam

SHEET NO. \_\_\_\_\_

OF \_\_\_\_\_

CALCULATED BY BOC

DATE 11/20/80

CHECKED BY QJH

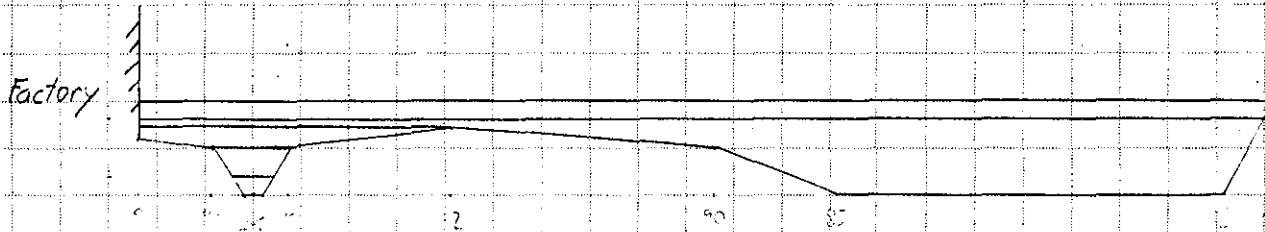
DATE 1/13/81

SCALE Sections IV, II

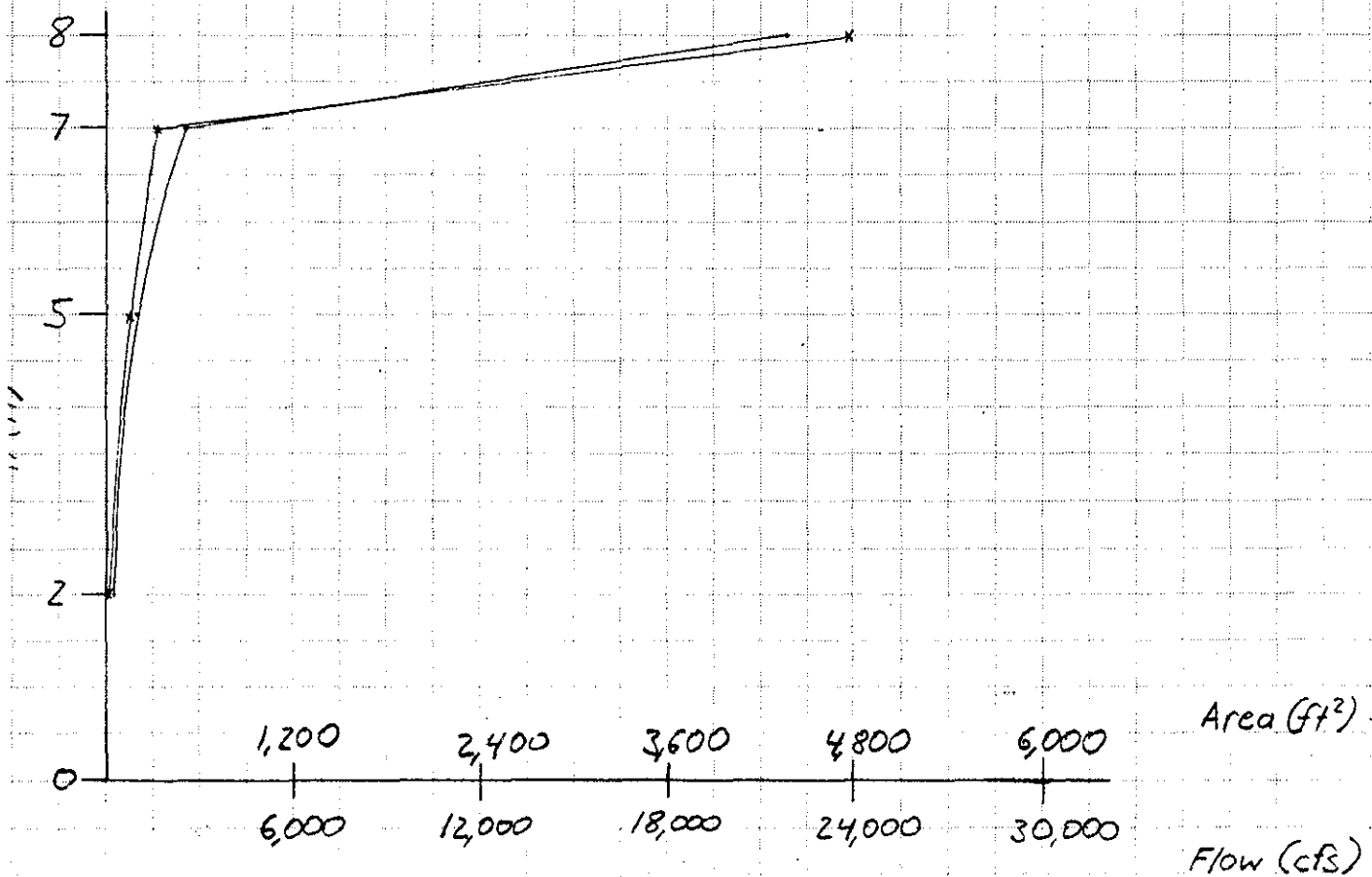
$S = 1.72\%$

$n = 0.075$

5' 40'



D	WP	A	R	$R^{2/3}$	$S^{1/2}$	V	Q
2	30	46	1.53	1.33	0.0981	2.59	119
5	64	187	2.92	2.04	"	3.97	743
7	260	511	1.97	1.57	"	3.06	1,563
8	932	4,356	4.67	2.80	"	5.45	23,760



APPENDIX E  
INVENTORY FORM